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Steven D. Smith
Director, Climate & Regulatory Affairs
Phillips 66
2331 Citywest Blvd.
Houston, TX 77042
Steven.d.smith@p66.com

Clerk's Office
California Air Resources Board
1001 I Street
Sacramento, CA 95814
Submitted Electronically via email to: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Re: Proposed Regulation: Advanced Clean Cars (ACC) II

Dear ARB,

Phillips 66 Company (Phillips 66) appreciates the opportunity to comment on the Air Resources Board (ARB) proposed regulation and Initial Statement of Reasons (ISOR) for Advanced Clean Cars (ACC) II. Phillips 66 is a major refiner and marketer of transportation fuels and other products in California where we market primarily through the 76® brand. This letter is in addition to comments we submitted on June 14, 2021 and highlights Phillips 66' key points that ACC II should include Emission Performance Standards, ARB should avoid technology mandates and instead ARB should support all innovations in energy transition for light duty vehicles to meet intended objectives.

We support and incorporate herein by reference the comments submitted by the Western States Petroleum Association (WSPA), dated May 31, 2022 and provide the following comments to emphasize key points.

ACC II should include Technology Neutral Performance Standards vs. Technology Mandates

Phillips 66 recognizes that the transition to lower-carbon transportation is underway. ARB has taken steps over many years to reduce emissions and improve the fuel efficiency of light-duty vehicles (LDV), including the current Advanced Clean Cars I standards. Our California refineries have evolved over



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many decades to produce gasoline that meets ARB's stringent Phase 3 Amended Reformulated Gasoline Standards (CaRFG3). Phillips 66 also complies with the Low Carbon Fuel Standard (LCFS) and our fuel obligations under the Cap-and-Trade program. Engine technology and gasoline improvement have worked together to help meet the State's goals. ARB has set the standards and let innovation determine the most technologically feasible and cost-effective solutions.

The challenge of further reducing carbon emissions from LDVs is now before us. Vehicle technology and energy (fuel) improvement can continue to work together to meet the State's greenhouse gas reduction goals. However, we unfortunately now see ARB straying from its successful tradition of establishing vehicle performance standards to now proposing to mandate only ZEV technology for future manufacturer sales of LDVs. The state is now picking winners and losers with its narrow definition of Zero Emission Vehicles (ZEV). While it is true that battery electric (BEV) and hydrogen fuel cell (FCEV) vehicles have no vehicle tailpipe carbon dioxide emissions, the full carbon life cycle of vehicle manufacturing and consumed energy (fuel) is not zero carbon. By separately addressing the vehicles via ACC II, and the energy consumed via the LCFS, ARB is missing the opportunity to address the two wholistically to achieve potentially more cost-effective outcomes. ARB's proposal does not consider the GHG implications across the full global vehicle manufacturing and supply chain. A true vehicle/fuel performance standard would correctly account for the full life cycle transportation carbon emissions, whereas ARB's prescriptive ZEV standard does not.

California's Budget Act of 2019 directed a review of transportation solutions to reduce carbon emissions. This resulted in the University of California Institute for Transportation Studies (UC ITS) report "Driving California's Transportation Emissions to Zero". While the report does address the transition to more ZEVs, it also speaks to the parallel importance of low-carbon liquid fuel solutions in stating *"policies to support the development of very low carbon liquid fuels should draw from the lessons learned during the decade of experience with the LCFS: policies should set ambitious, but achievable performance standards for desired application and create a framework for evaluation and incentives."* *"The state should not try to pick technological winners."* The report's Table EX-1 offered a vision for the future role of low-carbon gasoline and diesel for transportation.

Recommendation: ARB should redesign or add a compliance option to ACC II to leave space for future low-carbon fuels and combustion technology and avoid technology mandates. This could take the form of a carbon performance standard that includes the full life cycle carbon emissions of both the consumed energy (fuel) and vehicle. Proposed Section 1962.4(e) should be eliminated and replaced with a performance standard, or at a minimum, amended with an additional option where LDV manufacturers can satisfy part or all of their annual ZEV sales requirement with combustion vehicles using liquid (or gaseous) fuel with low carbon intensity.

Phillips 66 Innovation for Light-Duty Vehicles

The transition to lower-carbon-emitting LDVs is happening with different technologies and at different speeds nationally and internationally. We are participating in this transition, with real projects, for both combustion vehicles and other technologies. Below are examples of some of our actions for LDVs.

- Renewable Naphtha/Gasoline for LDV: Our Rodeo (San Francisco) California refinery has produced over 120 million gallons of renewable fuels since 2021. We thank ARB for its work to-date assisting us with LCFS pathways for different biogenic feedstocks. Looking ahead, we are pleased that Contra Costa County recently approved our plan to discontinue processing crude oil at Rodeo and transform the refinery to be one of the largest renewable liquid fuel facilities in the world. Our “Rodeo Renewed” project¹ when completed in 2024 will be one of the largest producers of renewable fuels in California and globally. We are grateful for ARB’s support of this project in public meetings. While we expect that the majority of Rodeo’s future product will be renewable diesel, the project will produce low-carbon renewable naphtha with a CI of approximately 25-55 depending on feedstock, and potentially Sustainable Aviation Fuel (SAF). The renewable naphtha may be blended with petroleum gasoline to produce finished California gasoline.
- Gasoline ethanol carbon intensity: We continue sales of gasoline with ethanol in California. We continue to identify, purchase and blend ethanol with increasingly lower carbon intensity (CI). ARB data shows that ethanol in California gasoline has trended to have lower CI since the start of the LCFS program in 2011 when ethanol averaged greater than 85 CI to today where ethanol averages less than 60 CI. This trend is reducing the CI of gasoline we sell in California.
- Batteries for PHEV and BEV: Phillips 66 is one of the world’s largest producers of fuel coke and/or graphite coke in nine of our eleven global refineries. Some of the highest-quality coke from our Lake Charles, Louisiana and Humber refineries is upgraded to high-quality graphite carbon used in electric vehicle battery anodes. Phillips 66 has also invested in NOVONIX and signed a technology development agreement² with the company to advance the production and commercialization of next-generation anode materials for lithium-ion batteries. We also have a joint development agreement with Faradion in the UK to develop next-generation materials for sodium ion batteries.
- Hydrogen for FCEV: Phillips 66 is currently selling hydrogen through our COOP venture in Switzerland, and in February we and H2 Energy Europe announced a commitment to develop up to 250 retail hydrogen refueling stations across Germany, Austria, and Denmark by 2026 through a 50-50 joint venture³. In California, we are looking to leverage our Europe retail fueling experience and are actively exploring a range of low carbon hydrogen production and supply options to support scaling of hydrogen refueling infrastructure. Also, our Humber Refinery in England has announced plans to pursue the use of lower-carbon hydrogen to refuel industrial heaters. Lastly, Phillips 66 and Plug Power signed a memorandum of understanding to collaborate on the development of low-carbon hydrogen business opportunities.



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These are examples of innovation by just our company to reduce carbon emissions from LDVs. We provide this as evidence to further support our position that ARB should continue to encourage innovation in LDVs via market mechanisms (e.g., Cap-and-Trade, LCFS) and vehicle/fuel performance standards, and discontinue proposing technology mandates.

Implementation Uncertainties Require Program Reviews and Adjustments

Phillips 66 is concerned that the proposed manufacturer mandates for BEV and FCEV, with limited options for PHEVs, could result in unintended consequences. There is uncertainty on whether the State's electricity system (generation, grid and storage, recharging infrastructure) can be expanded to support the BEV growth rate suggested by Section 1962.4. There are already concerns about grid reliability. Further, there is uncertainty in what future retail electricity and hydrogen prices will be for ZEVs. There is also uncertainty on future pricing and availability of BEVs and FCEVs. These implementation uncertainties could lead to increased risk of program failure and/or higher costs for California consumers.

Recommendation

ARB should replace the proposed ZEV mandate with a vehicle/fuel emissions performance standard consistent with its historic practices. Additionally, ARB should add required routine program reviews to the proposed regulations with metrics that would trigger program adjustments if markets don't develop as expected. We suggest that one or more of the below metrics be included in the regulation and trigger program adjustments as warranted.

- ZEV sales
- ZEV vs. ICE vehicle price
- Battery metals supply
- Electricity system expansion (generation, storage, grid, recharging)
- Electricity price to consumers, including transparency on the increase in price resulting from BEV power demand
- National/State security issues

Support Renewable Gasoline and Carbon Capture and Sequestration (CCS)

Recommendation: While not part of the ACC II rulemaking, ARB should at next opportunity take the following two actions:

- 1) amend the Cap-and-Trade Regulation Section 95852.2 to include renewable gasoline and renewable naphtha as a source without a compliance obligation. This would be consistent with this section's treatment of fuel ethanol, biodiesel and renewable diesel, and
- 2) amend the Mandatory Reporting Regulation (MRR) and Cap-and-Trade Regulation to recognize the negative carbon emissions of carbon capture and sequestration (CCS).

Thank you for this opportunity to submit comments. You can reach me at 832-765-1779 or steven.d.smith@p66.com.

Best Regards,



Steven D. Smith

1. [Phillips 66 | Rodeo Renewed gets green light from local county](#)
[Phillips 66 Makes Final Investment Decision to Convert San Francisco Refinery to a Renewable Fuels Facility - Phillips 66 - PSX](#)
2. [Phillips 66, NOVONIX Sign Technology Development Agreement to Advance Production of Lithium-Ion Batteries in North America - Phillips 66 - PSX](#)
3. [Phillips 66 | Phillips 66 and H2 Energy Europe to develop hydrogen refueling network in Germany, Austria and Denmark](#)



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